

WE CLAIM:

1. An optical stack comprising:

a) a first liquid crystal layer; and

b) a j-retarder disposed on the liquid crystal layer; wherein the j-retarder comprises a simultaneous biaxially stretched polymeric film being substantially non-absorbing and non-scattering for at least one polarization state of visible light; and having x, y, and z orthogonal indices of refraction wherein at least two of the orthogonal indices of refraction are not equal, an in-plane retardance being 100 nm or less and an absolute value of an out-of-plane retardance being 55 nm or greater.

2. The optical stack according to claim 1, further comprising a second liquid crystal layer wherein the j-retarder is disposed between the first liquid crystal layer and the second liquid crystal layer.

3. The optical stack according to claim 1, further comprising a polarizer layer wherein the first liquid crystal layer is disposed between the j-retarder and the polarizer layer.

4. The optical stack according to claim 3, wherein the polarizer layer is an absorbing polarizer layer.

5. The optical stack according to claim 4, further comprising a reflective polarizer layer wherein the absorbing polarizer layer is disposed between the first liquid crystal layer and the reflective polarizer layer.

6. An optical stack comprising:

a) a polarizer layer; and

b) a j-retarder disposed on the polarizer layer; wherein the j-retarder comprises a simultaneous biaxially stretched polymeric film being substantially non-absorbing and non-scattering for at least one polarization state of visible light; and having x, y, and z orthogonal indices of refraction wherein at least two of the orthogonal indices of

refraction are not equal, an in-plane retardance being 100 nm or less and an absolute value of an out-of-plane retardance being 55 nm or greater.

7. The optical stack according to claim 6, wherein the polarizer layer is an absorbing polarizer layer.

8. The optical stack according to claim 6, wherein the polarizer layer is a reflecting polarizer layer.

9. The optical stack according to claim 7, further comprising a reflecting polarizer layer wherein the absorbing polarizer layer is disposed between j-retarder and the reflecting polarizer layer.

10. A liquid crystal display comprising:

- a) a first liquid crystal layer;
- b) a light modulating device; and
- c) a j-retarder disposed between the first liquid crystal layer and the light modulating device; wherein the j-retarder comprises a simultaneous biaxially stretched polymeric film being substantially non-absorbing and non-scattering for at least one polarization state of visible light; and having x, y, and z orthogonal indices of refraction wherein at least two of the orthogonal indices of refraction are not equal, an in-plane retardance being 100 nm or less and an absolute value of an out-of-plane retardance being 55 nm or greater.

11. The liquid crystal display according to claim 10, further comprising a second liquid crystal layer disposed between the j-retarder and light modulating device.

12. The liquid crystal display according to claim 10, further comprising a polarizer layer wherein the first liquid crystal layer is disposed between the j-retarder and the polarizer layer.

13. The liquid crystal display according to claim 12, wherein the polarizer layer is an absorbing polarizer layer.

14. The liquid crystal display according to claim 13, further comprising a reflective polarizer layer wherein the absorbing polarizer layer is disposed between the first liquid crystal layer and the reflective layer.

15. A liquid crystal display comprising

a) a polarizer layer;

b) a light modulating device; and

c) a j-retarder disposed between the polarizer layer and the light modulating device;

wherein the j-retarder comprises a simultaneous biaxially stretched polyolefin film being substantially non-absorbing and non-scattering for at least one polarization state of visible light; and having x, y, and z orthogonal indices of refraction wherein at least two of the orthogonal indices of refraction are not equal, an in-plane retardance being 100 nm or less and an absolute value of an out-of-plane retardance being 55 nm or greater.

16. The liquid crystal display according to claim 15, wherein the polarizer layer is an absorbing polarizer layer.

17. The liquid crystal display according to claim 15, wherein the polarizer layer is a reflecting polarizer layer.

18. The liquid crystal display according to claim 16, further comprising a reflecting polarizer layer wherein the absorbing polarizer layer is disposed between the reflecting polarizer layer and the j-retarder.